Microbial Genome Sequencing Program

FY 2009 Program Announcement

Application Deadline: March 2, 2009

U.S. Department of Agriculture

Cooperative State Research, Education, and Extension Service

National Science Foundation

Microbial Genome Sequencing Program

Program Announcement:

Funding Opportunity Number:
USDA-CSREES-AFRI-001967

USDA Cooperative State Research, Education and Extension Service

National Science Foundation
Directorate for Biological Sciences

Full Proposal Deadline(s) (due by 5 p.m. Eastern time):

March 2, 2009

REVISION NOTES

In furtherance of the President's Management Agenda, Grants.gov provides a single Government-wide portal for finding and applying for Federal grants online. In response to this program solicitation, proposers are required to submit full proposals via Grants.gov.

This is the last year of this interagency activity.

SUMMARY OF PROGRAM REQUIREMENTS

General Information

Program Title:

Microbial Genome Sequencing Program

Synopsis of Program:

As a collaborative, interagency effort the Cooperative State Research, Education, and Extension Service (CSREES) of the U.S. Department of Agriculture and the National Science Foundation (NSF)will be inviting research proposals (i) to support high-throughput sequencing of the genomes of microorganisms (including plasmids, viruses, bacteria, archaea, fungi, oomycetes, protists, microeukaryotes and agriculturally important nematodes) and the metagenomes of mixed microbial communities and (ii) to develop and implement strategies, tools and technologies to make currently available and novel genome sequences more valuable to the user community.

The availability of genome sequences provides the foundation for understanding how microorganisms function and live, and how they interact with their environments and

with other organisms. The sequences are expected to be available to and used by a community of investigators to address issues of scientific and societal importance including:

- Novel aspects of microbial biochemistry, physiology, metabolism, development and cellular biology;
- The diversity and the roles microorganisms play in complex ecosystems and in global geochemical cycles;
- The impact that microorganisms have on the productivity and sustainability of agriculture and natural resources (e.g., forestry, soil and water), and on the safety and quality of the nation's food supply; and
- The organization and evolution of microbial genomes, and the mechanisms of transmission, exchange and reshuffling of genetic information.

A Microbial Genomics Workshop will be held; all awardees in this interagency program are expected to attend.

Cognizant Program Officer(s):

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Applicable Catalog of Federal Domestic Assistance (CFDA) Number(s):

- 10.310 --- Agriculture and Food Research Initiative
- 47.074 --- Biological Sciences, National Science Foundation

Award Information

Anticipated Type of Award: Standard Grant

Estimated Number of Awards: 15 to 20

Anticipated Funding Amount: Approximately $10 million is anticipated ($5 million of USDA and $5 million of NSF funds), pending availability of funds, with awards ranging between $100,000 to $1,200,000 total, for periods of up to three years.
PLEASE NOTE: USDA funding is subject to the availability of appropriation to carry out the Agriculture and Food Research Initiative (AFRI) Competitive Grants Program. Cooperative State Research, Education, and Extension Service (CSREES) reserves the

right to amend, delete, or otherwise alter it's participation in this program. **It is anticipated that the complete Request for Applications, which will contain the application submission instructions, will be made available in January 2009 on the CSREES Web site and the Grants.gov Web site.**

Eligibility Information

Organization Limit:

Proposals may only be submitted by the following:

CSREES Eligibility Criteria:

The source of USDA funds to support the fiscal year (FY) 2009 Microbial Genome Sequencing Program is subject to the availability of appropriations to carry out the AFRI program, the Secretary may award grants to State agricultural experiment stations; colleges and universities; university research foundations; other research institutions and organizations; Federal agencies; national laboratories; private organizations or corporations; individuals; or any group consisting of two or more of the aforementioned entities. Applications from scientists at non-U.S. organizations will not be accepted. Award recipients may subcontract to organizations not eligible to apply, provided such organizations are necessary for the conduct of the project.

NSF Eligibility Criteria:

Proposals are invited from academic institutions accredited and having a campus located in the U.S., U.S. non-profit research organizations, and consortia of such organizations with appropriate research and educational facilities. A proposal from a multi-organizational consortium must be submitted by the lead organization as a single proposal. When a consortium of eligible individuals or organizations submits a proposal, a single principal investigator must be designated as the project director (PD) and a single organization must accept overall management responsibility, including the management of intellectual property, that may result from the proposed research.

Simultaneous submission of proposals to this program and another federal agency is permissible with prior written approval of the appropriate program officers at each agency involved. Proposers are encouraged to establish international collaborations where appropriate. It is anticipated that foreign agencies will support the offshore activities of these programs. The NSF component of this program will not make awards or allow subcontracts to non-U.S. institutions.

PI Limit:

None Specified

Limit on Number of Proposals per Organization:

None Specified

Limit on Number of Proposals per PI:

None Specified

Proposal Preparation and Submission Instructions

A. Proposal Preparation Instructions

- **Letters of Intent**: Not Applicable

- **Full Proposal Preparation Instructions**: Full proposals must be submitted via Grants.gov:

- Please note: Additional information on how to access/use Grants.gov will be provided by CSREES/USDA. **It is anticipated that the complete Request for Applications, which will contain the application submission instructions, will be made available in early 2009 on the CSREES Web site and the Grants.gov Web site.**

B. Budgetary Information

- Cost Sharing Requirements: Cost Sharing is not required by CSREES or by NSF in proposals submitted under this Program Solicitation.

- Indirect Cost (F&A) Limitations:

    - The applicant should submit a proposal using their Federally-negotiated indirect cost rate.

CSREES Policy

Section 7132 of the Food, Conservation, and Energy Act of 2008, amended the National Agriculture Research, Extension, and Teaching Policy Act of 1977 (7 U.S.C. 3310(a)), limiting indirect costs to 22 percent of the total Federal funds provided under each award. Therefore, when preparing budgets, applicants should limit their requests for recovery of indirect costs to the lesser of their institution's official negotiated indirect cost rate or the equivalent of 22 percent of total Federal funds awarded.

To accommodate USDA limit on indirect costs, applicants may be required at the time of award to submit a revised budget. Proposals selected for funding by USDA will be asked to comply with the USDA 22 percent limit on indirect cost rates.

Other Budgetary Limitations: Not Applicable

NSF Policy

Standard NSF policy regarding indirect cost rates applies to proposals funded by the NSF.

C. Due Dates

Full Proposal Deadline(s) (due by 5 p.m. Eastern time):

March 2, 2009

Proposal Review Information Criteria

Merit Review Criteria: CSREES/USDA and NSF will follow the National Science Board approved criteria. Additional merit review considerations apply. Please see the full text of this solicitation for further information.

Award Administration Information

Award Conditions: Additional award conditions apply. Please see the full text of this solicitation for further information.

Reporting Requirements: Additional reporting requirements apply. Please see the full text of this solicitation for further information.

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I. INTRODUCTION

Microorganisms dominate the planet in terms of diversity and total biomass. They represent a vast array of species with enormous genetic, metabolic, structural, physiological and behavioral diversity. Despite their ubiquity, beyond human pathogens, a few model organisms, and a few broad surveys, little is known about their fundamental properties, the range in their diversity, how they interact with each other, with more complex life forms and with their environment, and the roles they play in global biogeochemical cycles. Future progress toward filling these knowledge gaps can be advanced significantly by the availability of whole genome sequences, by more complete and accurate information about the contents of sequenced genomes and through the full complement of genome sequences from microbial communities (i.e. metagenomes).

The Microbial Genome Sequencing Program is a collaborative interagency activity of the Cooperative State Research, Education, and Extension Service (CSREES) of the U.S. Department of Agriculture and the National Science Foundation (NSF). The program supports (i) high-throughput sequencing of the genomes of a broad range of microorganisms (including plasmids, viruses, bacteria, archaea, fungi, oomycetes, protists, microeukaryotes and agriculturally important nematodes) and the metagenomes of microbial communities and (ii) the development and implementation of strategies, tools and technologies to make currently available genome sequences more valuable to the user community. The newly acquired sequences are expected to be made available and used by a community of investigators to address issues of scientific and societal importance including:

- Novel aspects of microbial biochemistry, physiology, metabolism, development and cellular biology;
- The diversity and the roles microorganisms play in complex ecosystems and in global geochemical cycles;
- The impact that microorganisms have on the productivity and sustainability of agriculture and natural resources (e.g., forestry, soil and water), and on the safety and quality of the nation's food supply; and
- The organization and evolution of microbial genomes, and the mechanisms of transmission, exchange and reshuffling of genetic information.

The development and implementation of strategies, tools and technologies are expected to significantly enhance the value of existing and novel genome sequences.

This program is part of The Microbe Project, a coordinated effort of multiple federal agencies to promote genome-enabled microbial science. (See http://www.microbeproject.gov.)

II. PROGRAM DESCRIPTION

This program supports (i) the high-throughput sequencing of the genomes from a wide range of microorganisms (including plasmids, viruses, bacteria, archaea, fungi, oomycetes, protists, microeukaryotes and agriculturally important nematodes) and the metagenomes of mixed microbial communities that are either of fundamental biological interest, are important to the productivity and sustainability of agriculture and forestry, or to the safety and quality of the nation's food supply and (ii) the development and implementation of strategies, tools and technologies to make currently available genome sequences more valuable to the user community. The results will be partial or whole genome sequence data, more extensive and reliable annotation and whole genome mapping or scaffolding information. Proposers are encouraged to incorporate teaching, training, or outreach components within the scope of the project to facilitate the dissemination of knowledge and the education of students and the public. Taxon-based functional genomics studies are not within the scope of the Microbial Genome Sequencing Program unless they involve the development and implementation of strategies, tools and technologies to make genome sequences more valuable to user communities. Taxon-based functional genomics studies are supported by other Programs offered by CSREES and NSF; e.g., Microbial Genomics Program, Microbial Biology Program, and the Animal Health and Well-Being Program (http://www.csrees.usda.gov/fo/funding.cfm) and activities within the NSF Division of Molecular and Cellular Biosciences (http://www.nsf.gov/div/index.jsp?div=MCB).

All microorganisms, except strict human pathogens that are not related to food safety, are candidates for genome sequencing under this program. Proposers should justify organism selection on the basis of biological interest or agricultural importance, as well as community involvement, education and training, and societal impact. Factors to consider include metabolic potential, novel biochemical, structural or developmental features, phylogenetic affiliation, ecological or evolutionary significance, economic importance, and relevance to national security.

Proposals to sequence the genomes of agriculturally important nematodes will be accepted in the competition; such proposals will be eligible for funding by CSREES but not by NSF.

Projects will also be considered that include, for example, the sequencing of (i) expressed sequence tag (EST) libraries, (ii) clones from mixed environmental microbial populations, (iii) homologous genes (orthologs and paralogs), islands, plasmids or regions from the genomes of multiple organisms or (iv) metagenomes of microbial communities.

Complete coverage is generally the most desirable end-point for whole genome sequencing. However, the choice and justification of complete versus draft coverage is dependent on the nature and scope of the proposed project. For example, the genomes of some protists and fungi are relatively large and their sequencing may not easily be completed under the support of a single grant. Similarly, sequencing of prokaryotic genomes for comparative purposes or from environmental samples may not require or generate complete coverage.

The outcome of all draft sequencing projects is expected to include generation of high quality sequence data, organization of the sequence reads into contiguous sequences, correlation with physical maps when appropriate, annotation of open reading frames, and deposition of all information into a publicly accessible, **preexisting database**. Investigators who choose to create their own database must ensure accessibility and **justify why preexisting databases are not suitable**. Investigators should indicate how accessibility to the databases will be maintained after the award period.

For large genome projects, investigators are encouraged to seek partners, either in the form of consortia or support from other sources, so that the complete sequence, if appropriate, can be obtained in a reasonable time frame. If parallel support from another agency is under consideration or being planned, investigators should inform the cognizant CSREES and NSF program officers in advance and indicate in the proposal how the CSREES or NSF funded activity will be organized and coordinated within the larger project.

The limited ability to decipher the information content of sequenced genomes has seriously hindered the full experimental exploitation of this valuable resource. The Microbial Genome Sequencing Program encourages the development and implementation of strategies, tools and technologies to make currently available genome sequences more valuable to the user community. Proposals which contain activities directed toward the rigorous and unambiguous assignment of function to open reading frames will be considered. Projects to develop comparative analytical tools, and other tools and technologies for functional genomic analyses are encouraged. Plans should be described for dissemination of these tools and technologies to the broader community.

The program will entertain proposals to support finishing (closure) of draft genomes under limited circumstances. The resources for finishing and annotation will be directed toward organisms for which there is a large community of dedicated experimentalists, where the organism is unique, amenable to biochemical experimentation and genetic manipulation and provides a valuable new perspective on a biological question or phenomenon, and where the proposal is cost effective.

An important activity of this interagency program is the annual Microbial Genomics Workshop. This workshop is intended to highlight the breadth of the program and to facilitate exchange of scientific and technical information between awardees and projects. All awardees are expected to budget for annual attendance of the workshop and to send one representative to the workshop.

Organism strains that are being targeted in other, already funded, sequencing projects should be avoided, unless the sequence information from these other projects is incomplete or will not be in the public domain. If one strain of a species has been or is being sequenced, the proposer should provide strong justification as to why the sequencing of other strains should be undertaken. Examples of compilations of microbial genome sequencing projects are available at the following URLs:

http://www.genomesonline.org
http://cmr.tigr.org/tigr-scripts/CMR/shared/Genomes.cgi
http://genome.jgi-psf.org/mic_home.html
http://www3.niaid.nih.gov/research/resources/mscs/default.htm
http://www.sanger.ac.uk/Projects/
http://www.genome.wustl.edu/
http://hgsc.bcm.tmc.edu/
http://www.broad.mit.edu/annotation/

CSREES and NSF will determine which agency will support each award. These decisions will be based on the relevance of the project goals to the activities of the agency (CSREES, food and agricultural relevance, NSF, fundamental biological knowledge) and the availability of funds. Proposers may request funding for up to three years. The requested duration should be consistent with the goals of the project. Detailed information on (i) the organisms chosen, (ii) the coordination, management and organizational plan, (iii) the method of library preparation and all other pertinent methodological information, and (iv) the method for disseminating data and interfacing with the broader scientific community and the public, should be provided.

Rapid, inexpensive high throughput sequencing technology is advancing rapidly. All sequencing technologies and strategies, particularly ones that are novel, as well as the mechanisms to assess validity and accuracy of the data must be described in the proposal. Proposers should consider how new technologies might be exploited to achieve the aims of their projects. Sequencing costs may vary depending on the approach chosen. **An estimate of, and explanation and justification for sequencing costs must be provided**. Activities such as manual annotation, and integral education and outreach are appropriate for inclusion in the project; when included, full justification and a description of the appropriateness within the context of the project is required. Factors resulting in additional costs (e.g., resulting from methodological complexity, education and outreach, community integration, resource storage and management, etc.) should be clearly identified and rationalized. In judging the merits of a proposal, the speed, level of accuracy, and cost effectiveness of the proposed work and the identification and involvement of an active community of experimental users will be among the evaluation criteria.

All proposals should have a project management plan, that will include a timeline and a clear statement of what the project deliverables (or products) will be at the end of the project period (i.e., a complete and finished sequence; a repository site for the sequence; tools for accessing the sequence; completed automated and manual annotation). The

timeline should cover scheduling, resource allocation, milestones, contingencies and deliverables. There should be clear examples of what will be accomplished by each person in the proposal.

Awards will be made in the form of grants to be determined at the time of the award. Each participating agency will obligate funds separately and any particular award may be funded by one or both of the participating agencies. The exact amount of an award will depend on the advice of the reviewers, agency priorities and the availability of funds. In FY 2008, the award sizes ranged from $150,000 to $1,000,000 for up to three years. Further information on awards made in this program during FY 2008 is available at the following links:

USDA/CSREES Awards http://cris.csrees.usda.gov/cgi-bin/starfinder/0?path=nrimglink.txt&id=anon&pass=&search=(CG=*35600*;an=0205775)%20not%20(PS=TERM*;an=(0212793;0212859;0212772;0212863))&format=WEBTITLESG

NSF Awards http://www.nsf.gov/bio/pubs/awards/microbgen.htm

III. AWARD INFORMATION

Estimated program budget, number of awards and average award size/duration are subject to the availability of funds. Between 15 and 20 awards are anticipated in this program in FY 2009, and will be made as standard grants, with most budgets ranging from $100,000 to $1,200,000 for durations up to three years.

IV. ELIGIBILITY INFORMATION

Organization Limit:

Proposals may only be submitted by the following:

Organization Limit:

CSREES Eligibility Criteria:

The source of USDA funds to support the fiscal year (FY) 2009 Microbial Genome Sequencing Program is subject to the availability of appropriations to carry out the AFRI program, the Secretary may award grants to State agricultural experiment stations; colleges and universities; university research foundations; other research institutions and organizations; Federal agencies; national laboratories; private organizations or corporations; individuals; or any group consisting of two or more of the aforementioned entities. Applications from scientists at non-U.S. organizations will not be accepted. Award recipients may subcontract to organizations not eligible to apply, provided such organizations are necessary for the conduct of the project.

NSF Eligibility Criteria:

Proposals are invited from academic institutions accredited and having a campus located in the U.S., U.S. non-profit research organizations, and consortia of such organizations with appropriate research and educational facilities. A proposal from a multi-organizational consortium must be submitted by the lead organization as a single proposal. When a consortium of eligible individuals or organizations submits a proposal, a single principal investigator must be designated as the project director (PD) and a single organization must accept overall management responsibility, including the management of intellectual property, that may result from the proposed research.

Simultaneous submission of proposals to this program and another federal agency is permissible with prior written approval of the appropriate program officers at each agency involved. Proposers are encouraged to establish international collaborations where appropriate. It is anticipated that foreign agencies will support the offshore activities of these programs. The NSF component of this program will not make awards or allow subcontracts to non-U.S. institutions.

PI Limit:

None Specified

Limit on Number of Proposals per Organization:

None Specified

Limit on Number of Proposals per PI:

None Specified

Additional Eligibility Info:

V. PROPOSAL PREPARATION AND SUBMISSION INSTRUCTIONS

A. Proposal Preparation Instructions

Full Proposal Preparation Instructions: Proposers are required to submit proposals in response to the full Program Solicitation which will be posted on Grants.gov in January 2009. Instructions in the form of a Grants.gov application guide will be included with the solicitation posted by CSREES/USDA.

Proposers or applicants who have had prior support from the Microbial Genome Sequencing Program from CSREES/USDA and/or NSF should indicate the results of that prior support in the Project Description section of the application.

Applicants selected for funding by either CSREES or NSF will be required to submit agency-specific forms prior to the awarding of the grant. Successful applicants will be notified at the time of award to prepare and submit applicable forms.

B. Budgetary Information

Cost Sharing: Cost sharing is not required by CSREES or by NSF in proposals submitted under this Program Solicitation.

Indirect Cost (F&A) Limitations:

The applicant should submit a proposal using their Federally negotiated indirect cost rate.

CSREES Policy

Section 7132 of the Food, Conservation, and Energy Act of 2008, amended the National Agriculture Research, Extension, and Teaching Policy Act of 1977 (7 U.S.C. 3310(a)), limiting indirect costs to 22 percent of the total Federal funds provided under each award. Therefore, when preparing budgets, applicants should limit their requests for recovery of indirect costs to the lesser of their institution's official negotiated indirect cost rate or the equivalent of 22 percent of total Federal funds awarded.

To accommodate USDA limit on indirect costs, applicants may be required at the time of award to submit a revised budget. Proposals selected for funding by USDA will be asked to comply with the USDA 22 percent limit on indirect cost rates.

NSF Policy

Standard NSF policy regarding indirect cost rates applies to proposals funded by the NSF.

Budget Preparation Instructions:

A budget is required for each year of requested support. In addition, a cumulative budget is required detailing the requested total support for the overall project period. Funds may be requested under any of the categories listed on the budget, provided that the item or service for which support is requested is allowable under the authorizing legislation, the applicable statutes, regulations, and Federal cost principles, and these program guidelines, and can be justified as necessary for the successful conduct of the proposed project. In the budget justification, all budget categories for which support is requested, with the exception of Indirect Costs, must be individually listed (with costs) in the same order as in the budget and justified on a separate page.

Proposers are reminded to include in the cumulative budget the cost of the principal investigator or designee to attend the annual Microbial Genomics Awardee Workshop

that is organized by CSREES and NSF. This meeting is often held as a satellite to a larger national genomics meeting.

C. Due Dates

Full Proposal Deadline(s) (due by 5 p.m. Eastern time):

March 2, 2009

D. Grants.gov Requirements

Proposals Submitted Via Grants.gov:

Before using Grants.gov for the first time, each organization must register to create an institutional profile. Once registered, the applicant's organization can then apply for any federal grant on the Grants.gov website. The Grants.gov's Grant Community User Guide is a comprehensive reference document that provides technical information about Grants.gov. Proposers can download the User Guide as a Microsoft Word document or as a PDF document. The Grants.gov User Guide is available at: http://www.grants.gov/CustomerSupport. For Grants.gov user support, contact the Grants.gov Contact Center at 1-800-518-4726 or by email: support@grants.gov. The Grants.gov Contact Center answers general technical questions related to the use of Grants.gov. Specific questions related to this program solicitation should be referred to the CSREES and NSF program staff contact(s) listed in Section VIII of this solicitation.

Submitting the Proposal: Required forms will be posted with the full solicitation in January 2009. Once all documents have been completed, the Authorized Representative (AR) must submit the application to Grants.gov and verify the desired funding opportunity and agency to which the application is submitted. The AR must then sign and submit the application to Grants.gov.

VI. CSREES/USDA PROPOSAL PROCESSING AND REVIEW PROCEDURES

Proposals received by CSREES are assigned to the appropriate CSREES program and, if they are compliant with the CSREES proposal preparation requirements, accepted for review. All proposals are carefully reviewed by a scientist, engineer, or educator serving as a CSREES or NSF Program Officer, and usually by three to ten other persons outside each agency who are experts in the particular fields represented by the proposal. These reviewers are selected by Program Officers charged with the oversight of the review process. Care is taken to ensure that reviewers have no conflicts with the proposer.

A. Merit Review Criteria

All proposals are evaluated through use of two merit review criteria: intellectual merit and the broader impacts of the proposed effort. In this instance, however, CSREES and NSF will employ additional criteria as required to highlight the specific objectives of the Microbial Genome Sequencing Program.

The two merit review criteria are listed below. The criteria include considerations that help define them. These considerations are suggestions and not all will apply to any given proposal. While proposers must address both merit review criteria, reviewers will be asked to address only those considerations that are relevant to the proposal being considered and for which the reviewer is qualified to make judgments.

What is the intellectual merit of the proposed activity?
How important is the proposed activity to advancing knowledge and understanding within its own field or across different fields? How well qualified is the proposer (individual or team) to conduct the project? (If appropriate, the reviewer will comment on the quality of the prior work.) To what extent does the proposed activity suggest and explore creative, original, or potentially transformative concepts? How well conceived and organized is the proposed activity? Is there sufficient access to resources?

What are the broader impacts of the proposed activity?
How well does the activity advance discovery and understanding while promoting teaching, training, and learning? How well does the proposed activity broaden the participation of underrepresented groups (e.g., gender, ethnicity, disability, geographic)? To what extent will it enhance the infrastructure for research and education, such as facilities, instrumentation, networks, and partnerships? Will the results be disseminated broadly to enhance scientific and technological understanding? What may be the benefits of the proposed activity to society?

Additional Review Criteria:

The following additional evaluation factors will be considered in reviewing all proposals:

1. Relevance of the microorganism(s) to be sequenced and the scientific merit of the project. This criterion addresses the scientific and/or practical importance of the microorganism chosen for sequencing, the novelty, uniqueness and originality of the proposal, and the conceptual adequacy of the sequencing approach including suitability of methodology, clarity and delineation of objectives, and demonstration of feasibility through preliminary data (e.g., known or estimated genome size and techniques for isolation of nucleic acid).

2. The speed, level of accuracy, and cost effectiveness of the proposed work.

3. Project management. This criterion addresses the overall quality of the technical and managerial aspects of the proposal, including management oversight, long-range

planning, release of the data, and sharing of the information and resources resulting from the project within the broader scientific community. To this end, applications are required to have a section on deliverables that would include a time line and a clear statement of what the project deliverables (or products) will be at the end of the project period (i.e., a complete and finished sequence; a repository site for the sequence; tools for accessing the sequence; completed automated and manual annotation, etc.). The time line should cover scheduling, resource allocation, milestones, contingencies and deliverables. There should be clear examples of what will be accomplished by each person in the proposal.

4. Scientific collaboration and information sharing and the identification and involvement of an active community of experimental users. Sequencing of the genome of an organism is a community activity. As such, a close collaboration among the scientists and organizations involved in sequencing activities and effective dissemination to the potential users of the information are important components of this criterion. This criterion also includes adequacy of plans for long-term maintenance of data accessibility and plans for updating data in response to new information about functional assignments. Thus, key criteria are compatibility, accessibility, longevity and the size and enthusiasm of the user community.

5. Appropriateness of the proposed budget. Budget requests should be proportional to the size of the genome(s) to be sequenced or the amount of sequencing to be done. Sequencing costs must be explained and justified. Additional activities, such as manual annotation, and integral education and outreach are appropriate for inclusion in the project; when included, full justification and a description of appropriateness within the context of the project is required. Factors resulting in additional costs (e.g., resulting from methodological complexity, education and outreach, community integration, resource storage and management) should be clearly identified and rationalized.

6. For proposals to enhance existing annotation programs and resources, it is imperative that enhancements be compatible with existing sites (e.g. websites in examples of compilations above) and that principal investigators and submitting institutions foster compatibility. Concrete examples of how the proposed project would improve current resources are encouraged.

B. Review and Selection Process

All proposals are carefully reviewed by at least three other persons who are experts in the particular field represented by the proposal. Proposals submitted under this program solicitation will be carefully reviewed by a combination of at least three ad hoc (mail) or panel reviewers who have expertise in some aspect of the proposal. Reviewers are selected by the responsible program officer and are asked to provide a written critique of the proposal that addresses the two review criteria and the special program criteria described above. The written reviews will also include an overall rating of the proposal. An individual reviewer may not have expertise in all aspects of a complex proposal and therefore may choose to focus on areas that are closest to their areas of expertise. In all cases reviews are treated as confidential documents.

Ad hoc Review and/or Panel Review:

Each proposal, along with the associated written reviews, will be discussed by a review panel. The panel will rate each proposal relative to all other proposals under consideration. A summary of the panel deliberations will be written by one of the panelists. The summary will describe substantive issues raised by the panel that are not covered in the written reviews, and in addition, will provide a general impression of the enthusiasm of the panel for the project and their overall panel rating of the proposal. The panel rating is not intended to be an average of the ratings of the written reviews.

The Program Directors assigned to manage the review of the proposals will consider all available information, including the written ad hoc and panel reviews, the panel discussion and rating, the panel summary and all other available information and formulate a recommendation to award or decline the proposal. After programmatic approval has been obtained, the proposals recommended for funding will be forwarded to either the CSREES/USDA Office of Extramural Programs (OEP) or the NSF Division of Grants and Agreements for review of business, financial, and policy implications and the processing and issuance of a grant or other agreement. Proposers are cautioned that only an OEP Authorized Departmental Officer or a NSF Grants and Agreements Officer may make commitments, obligations, awards or authorize the expenditure of funds on behalf of either USDA or NSF. No commitment on the part of either USDA or NSF should be inferred from technical or budgetary discussions with a USDA or NSF Program Director. A Principal Investigator or organization that makes financial or personnel commitments in the absence of a grant or cooperative agreement signed by the CSREES Authorized Departmental Officer or the NSF Grants and Agreements Officer, does so at their own risk.

For both awarded and declined proposals, verbatim copies of all written reviews and the panel summary, excluding the names of the reviewers, are sent to the Principal Investigator/Project Director by the Program Director. In addition, the proposer will receive an explanation of the decision to award or decline funding.

VII. AWARD ADMINISTRATION INFORMATION

A. Notification of the Award

Notification of CSREES awards is made to the submitting organization by the Authorized Departmental Officer in the Awards Management Branch. Notification of an NSF award is made to the submitting organization by a Grants Officer in the Division of Grants and Agreements. Organizations whose proposals are declined will be advised as promptly as possible by the cognizant CSREES or NSF Program Director administering the program. Verbatim copies of reviews, not including the identity of the reviewer, will be provided automatically to the Principal Investigator. (See Section VI.B. for additional information on the review process.)

B. Award Conditions

A CSREES award document shall include at a minimum the following:

1. Legal name and address of performing organization or institution to whom the CSREES Administrator has awarded a grant under the terms of this solicitation;

2. Title of project;

3. Name(s) and institution(s) of Project Directors chosen to direct and control approved activities;

4. Identifying grant number assigned by CSREES;

5. Project period, specifying the amount of time CSREES intends to support the project without requiring recompetition for funds;

6. Total amount of CSREES financial assistance approved by the CSREES Administrator during the project period;

7. Legal authority(ies) under which the grant is awarded;

8. Appropriate Catalog of Federal Domestic Assistance (CFDA) number;

9. Applicable award terms and conditions (see http://www.csrees.usda.gov/business/awards/awardterms.html for CSREES award terms and conditions);

10. Approved budget plan for categorizing allocable project funds to accomplish the stated purpose of the grant award; and

11. Other information or provisions deemed necessary by CSREES to carry out its respective granting activities or to accomplish the purpose of a particular grant.

An NSF award consists of: (1) the award letter, which includes any special provisions applicable to the award and any numbered amendments thereto; (2) the budget, which indicates the amounts, by categories of expense, on which NSF has based its support (or otherwise communicates any specific approvals or disapprovals of proposed expenditures); (3) the proposal referenced in the award letter; (4) the applicable award conditions, such as Grant General Conditions (GC-1); * or Federal Demonstration Partnership (FDP) Terms and Conditions * and (5) any announcement or other NSF issuance that may be incorporated by reference in the award letter. Cooperative agreements also are administered in accordance with NSF Cooperative Agreement Financial and Administrative Terms and Conditions (CA-FATC) and the applicable Programmatic Terms and Conditions. NSF awards are electronically signed by an NSF

Grants and Agreements Officer and transmitted electronically to the organization via e-mail.

These documents may be accessed electronically on NSF's Website at http://www.nsf.gov/awards/managing/general_conditions.jsp?org=NSF. Paper copies may be obtained from the NSF Publications Clearinghouse, telephone (703) 292-7827 or by e-mail from pubs@nsf.gov.

More comprehensive information on NSF Award Conditions and other important information on the administration of NSF awards is contained in the NSF Award & Administration Guide (AAG) Chapter II, available electronically on the NSF Website at http://www.nsf.gov/publications/pub_summ.jsp?ods_key=aag.

Special Award Conditions:

CSREES Awards

Within the limit of funds available for such purpose, the awarding CSREES official shall make grants to those responsible, eligible applicants whose applications are judged most meritorious under the procedures set forth in this program solicitation. All funds granted by CSREES under this solicitation shall be expended solely for the purpose for which the funds are granted in accordance with the approved application and budget, the regulations, the terms and conditions of the award, the applicable Federal cost principles, and the assistance regulations of the USDA (2 CFR 215 and 3430 of 7 CFR).

Specific management information relating to an applicant shall be submitted on a one-time basis as part of the responsibility determination prior to the award of a grant identified under this solicitation, if such information has not been provided previously under this or another CSREES program. CSREES will provide copies of forms recommended for use in fulfilling these requirements as part of the preaward process. Although an applicant may be eligible based on its status as one of these entities, there are factors which may exclude an applicant from receiving Federal financial and nonfinancial assistance and benefits under this program (e.g., debarment or suspension of an individual involved or a determination that an applicant is not responsible based on submitted organizational management information).

C. Reporting Requirements

CSREES Awards

Applicants selected for funding by CSREES will need to submit the Current Research Information System (CRIS) forms AD-416 and AD-417 for NEW awards only. These forms must be submitted electronically via the CRIS Web Forms site at http://cwf.uvm.edu/cris. For assistance with CRIS forms, please contact the CRIS office at 202-690-0009 or cdeckers@cris.csrees.usda.gov.

NSF Awards

For all multi-year grants, the Principal Investigator must submit an annual project report to the cognizant Program Officer at least 90 days before the end of the current budget period. Within 90 days after expiration of a grant, the PI also is required to submit a final project report.

Failure to provide the required annual or final project reports will delay NSF review and processing of any future funding increments as well as any pending proposals for that PI. PIs should examine the formats of the required reports in advance to assure availability of required data.

PIs are required to use NSF's electronic project-reporting system, available through FastLane, for preparation and submission of annual and final project reports. Such reports provide information on activities and findings, project participants (individual and organizational) publications; and, other specific products and contributions. PIs will not be required to re-enter information previously provided, either with a proposal or in earlier updates using the electronic system. Submission of the report via FastLane constitutes certification by the PI that the contents of the report are accurate and complete.

VIII. AGENCY CONTACTS

General inquiries regarding this program should be made to:

Ann Lichens-Park, National Program Leader, CSREES, U.S. Department of Agriculture, telephone: (202) 401-6460, fax: (202) 401-6488, e-mail to: apark@csrees.usda.gov

Daniel Jones, National Program Leader, CSREES, U.S. Department of Agriculture, telephone: (202) 401-6854, e-mail to: djones@csrees.usda.gov

Lita M. Proctor, Program Director, Division of Biological Infrastructure, National Science Foundation, telephone, (703) 292-5190, fax (703) 292-9063, e-mail to: lproctor@nsf.gov

For questions relating to Grants.gov contact:

Grants.gov Contact Center: If the Authorized Organizational Representatives (AOR) has not received a confirmation message from Grants.gov within 48 hours of submission of application, please contact via telephone: 1-800-518-4726; mail to: support@grants.gov

IX. OTHER INFORMATION

CSREES supports a wide variety of agricultural research and educational programs. Further information concerning funding opportunities may be obtained on the CSREES web site at http://www.csrees.usda.gov/fo/funding.cfm.

The NSF Website provides the most comprehensive source of information on NSF Directorates (including contact information), programs and funding opportunities. Use of this Website by potential proposers is strongly encouraged. In addition, MyNSF (formerly the Custom News Service) is an information-delivery system designed to keep potential proposers and other interested parties apprised of new NSF funding opportunities and publications, important changes in proposal and award policies and procedures, and upcoming NSF Regional Grants Conferences. Subscribers are informed through e-mail or the user's Web browser each time new publications are issued that match their identified interests. MyNSF also is available on NSF's Website at http://www.nsf.gov/mynsf/.

Grants.gov provides an additional electronic capability to search for Federal government-wide grant opportunities. CSREES and NSF funding opportunities may be accessed via this new mechanism. Further information on Grants.gov may be obtained at http://www.grants.gov.

ABOUT THE U.S. DEPARTMENT OF AGRICULTURE COOPERATIVE STATE, RESEARCH, EDUCATION AND EXTENSION SERVICE

The Cooperative State Research, Education, and Extension Service (CSREES) is an agency within the U.S. Department of Agriculture (USDA). CSREES is one of four USDA agencies that make up its Research, Education, and Economics (REE) mission area. The other three agencies are:

- Agricultural Research Service (ARS)
- Economics Research Service (ERS)
- National Agricultural Statistics Service (NASS)

The USDA-REE agencies provide federal leadership in creating and disseminating knowledge spanning the biological, physical, and social sciences related to agricultural research, economic analysis, statistics, extension, and higher education.

CSREES' unique mission is to advance knowledge for agriculture, the environment, human health and well-being, and communities by supporting research, education, and extension programs in the Land-Grant University System and other partner organizations.

CSREES' targeted areas of interest—its 60 identified programs—are grouped in the following National Emphasis Areas:

- Agricultural & Food Biosecurity

- Agricultural Systems
- Animals & Animal Products
- Biotechnology & Genomics
- Economics & Commerce
- Education
- Families, Youth & Communities
- Food, Nutrition & Health
- International
- Natural Resources & Environment
- Pest Management
- Plants & Plant Products
- Technology & Engineering

CSREES' two key mechanisms for accomplishing its mission of "advancing knowledge" are:

- **National program leadership**. We help states identify and meet research, extension, and education priorities in areas of public concern that affect agricultural producers, small business owners, youth and families, and others.
- **Federal assistance**. We provide annual formula grants to land-grant universities and competitively granted funds to researchers in land-grant and other universities.

CSREES and its partners focus on critical issues affecting people's daily lives and the nation's future. The advanced research and educational technologies we support empower people and communities to solve problems and improve their lives on the local level.

We respond to quality-of-life problems such as:

- Improving agricultural productivity
- Creating new products
- Protecting animal and plant health
- Promoting sound human nutrition and health
- Strengthening children, youth, and families
- Revitalizing rural American communities

Through all of these activities, CSREES impacts the lives of millions of Americans each day.

ABOUT THE NATIONAL SCIENCE FOUNDATION

The National Science Foundation (NSF) is an independent Federal agency created by the National Science Foundation Act of 1950, as amended (42 USC 1861-75). The Act states the purpose of the NSF is "to promote the progress of science; [and] to advance the

national health, prosperity, and welfare by supporting research and education in all fields of science and engineering."

NSF funds research and education in most fields of science and engineering. It does this through grants and cooperative agreements to more than 2,000 colleges, universities, K-12 school systems, businesses, informal science organizations and other research organizations throughout the US. The Foundation accounts for about one-fourth of Federal support to academic institutions for basic research.

NSF receives approximately 40,000 proposals each year for research, education and training projects, of which approximately 11,000 are funded. In addition, the Foundation receives several thousand applications for graduate and postdoctoral fellowships. The agency operates no laboratories itself but does support National Research Centers, user facilities, certain oceanographic vessels and Antarctic research stations. The Foundation also supports cooperative research between universities and industry, US participation in international scientific and engineering efforts, and educational activities at every academic level.

Facilitation Awards for Scientists and Engineers with Disabilities provide funding for special assistance or equipment to enable persons with disabilities to work on NSF-supported projects. See Grant Proposal Guide Chapter II, Section D.2 for instructions regarding preparation of these types of proposals.

The National Science Foundation has Telephonic Device for the Deaf (TDD) and Federal Information Relay Service (FIRS) capabilities that enable individuals with hearing impairments to communicate with the Foundation about NSF programs, employment or general information. TDD may be accessed at (703) 292-5090 and (800) 281-8749, FIRS at (800) 877-8339.

The National Science Foundation Information Center may be reached at (703) 292-5111.

The National Science Foundation promotes and advances scientific progress in the United States by competitively awarding grants and cooperative agreements for research and education in the sciences, mathematics, and engineering.

To get the latest information about program deadlines, to download copies of NSF publications, and to access abstracts of awards, visit the NSF Website at http://www.nsf.gov.

Location:
4201 Wilson Blvd. Arlington, VA 22230
For General Information (703) 292-5111
(NSF Information Center):

- TDD (for the hearing-impaired): (703) 292-5090

- To Order Publications or Forms:

- Send mail to: pubs@nsf.gov or telephone: (703) 292-7827

- To Locate NSF Employees: (703) 292-5111